

## DEVOPS-DAY-2

### DOCKER:

Docker is a platform that provides virtual containers on which an application can be deployed independent of the underlying OS of the server. Further the container can be created from a replica called docker image which contains all the dependencies and can run on any OS that has docker engine, with similar results

### DOCKER INSTALLATION:

```
-> sudo apt install docker.io -y
-> sudo service docker restart
-> sudo service docker status
-> sudo usermod =aG docker $USER //PERMISSION
-> docker images
-> docker ps
-> sudo chmod 666 /var/run/docker.sock
```

### MAVEN INSTALLATION:

```
sudo apt update -y

sudo apt install maven -y

mvn -version
```

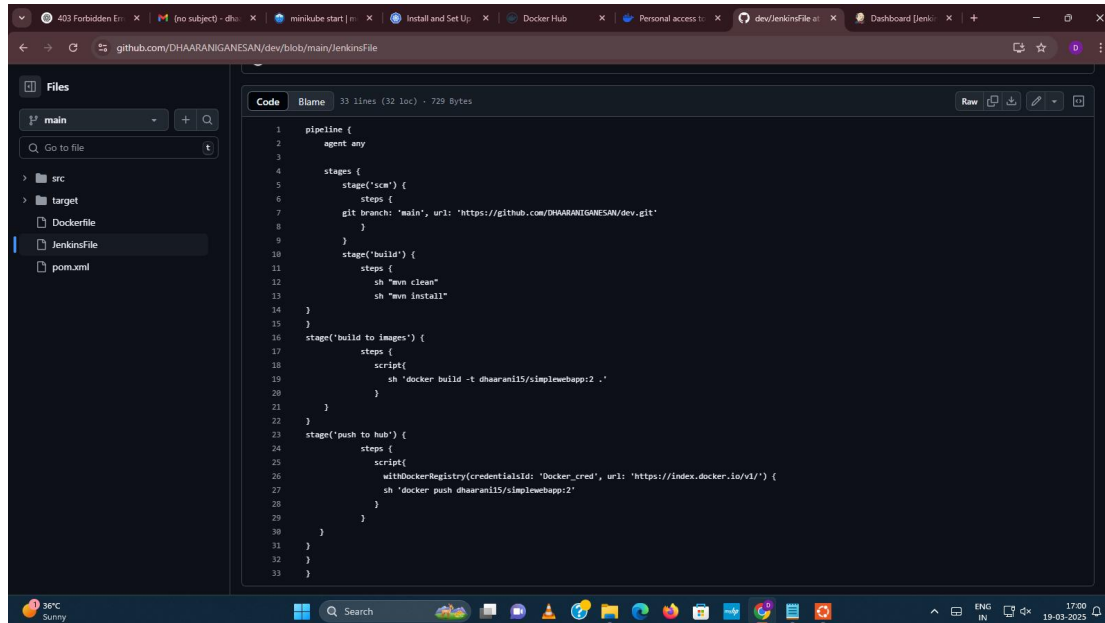
### JENKINS

Jenkins is an open-source automation tool written in Java programming language that allows continuous integration. Jenkins offers a straightforward way to set up a continuous integration or continuous delivery environment for almost any combination of languages and source code repositories using pipelines, as well as automating other routine development tasks.

The following are the main or most popular Jenkins use cases:

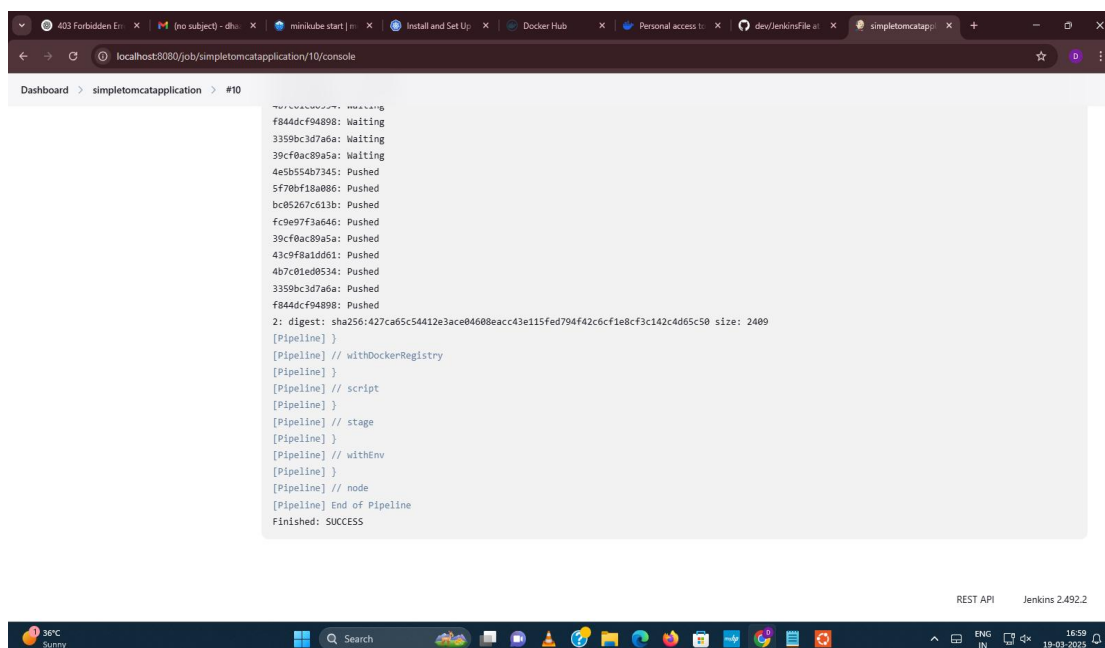
- Continuous Integration: With Jenkins pipelines, we can achieve CI for both applications and infrastructure as code.
- Continuous Delivery: You can set up well-defined and automated application delivery workflows with Jenkins pipelines.

Jenkins achieves CI (Continuous Integration) and CD (Continuous Deployment) with the help of plugins. Plugins are used to allow the integration of various DevOps stages. If you want to integrate a particular tool, you must install the plugins for that tool.



The screenshot shows a web browser displaying a Jenkinsfile on GitHub. The file is located at `github.com/DHAARANIGANESAN/dev/blob/main/Jenkinsfile`. The file content is as follows:

```
1 pipeline {
2   agent any
3
4   stages {
5     stage('src') {
6       steps {
7         git branch: 'main', url: 'https://github.com/DHAARANIGANESAN/dev.git'
8       }
9     }
10    stage('build') {
11      steps {
12        sh "mvn clean"
13        sh "mvn install"
14      }
15    }
16    stage('build to images') {
17      steps {
18        script{
19          sh 'docker build -t dhaaran15/simplewebapp:2 .'
20        }
21      }
22    }
23    stage('push to hub') {
24      steps {
25        script{
26          withDockerRegistry(credentialsId: 'Docker_cred', url: 'https://index.docker.io/v1/') {
27            sh 'docker push dhaaran15/simplewebapp:2'
28          }
29        }
30      }
31    }
32  }
33 }
```



The screenshot shows the Jenkins console output for a job named `simpletomcatapplication`. The output displays the following information:

```
Dashboard > simpletomcatapplication > #10
707c330027: Waiting
f844dcf94898: Waiting
3359bc3d7a6a: Waiting
39cf8ac89a5a: Waiting
4e5b554b7345: Pushed
5f70b18a0806: Pushed
bc05267c613b: Pushed
fc9e97f3a446: Pushed
39cf8ac89a5a: Pushed
43c9f8a1dd61: Pushed
4b7c01ed0534: Pushed
3359bc3d7a6a: Pushed
f844dcf94898: Pushed
2: digest: sha256:427ca65c54412e3ace04608eacc43e115fed794f42c6cf1e8cf3c142c4d65c50 size: 2409
[Pipeline] }
[Pipeline] // withDockerRegistry
[Pipeline] }
[Pipeline] // script
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

403 Forbidden Error

(no subject) - dha...

minikube start | n...

Install and Set Up

Docker Hub

Personal access t...

dev/jenkinsFile at

Dashboard [jenk...

localhost:8080

Jenkins

log out

Dashboard

New Item

Build History

Manage Jenkins

My Views

Build Queue

No builds in the queue.

Build Executor Status

0/2

All

S	W	Name	Last Success	Last Failure	Last Duration
		maven	2 hr 17 min #2	N/A	2.2 sec
		simpletomcatapplication	1 min 45 sec #10	8 min 10 sec #9	1 min 28 sec

Icons: S M L

REST API

Jenkins 2.432.2

36°C Sunny

Search

17:00 19-03-2023

403 Forbidden Error Fix

Inbox (3,343) - dhaaranig.22...

Docker Hub

Account information | Dock...

dev/jenkinsFile at main - D...

Dashboard [jenkins]

hub.docker.com/repositories/dhaaranig15

New

Introducing our new CEO Don Johnson - Read More

dockerhub

Explore

My Hub

Search Docker Hub

CTH+K

dhaaranig15

Docker Personal

Repositories

Settings

Default privacy

Notifications

Billing

Usage

Pulls

Storage

Repositories

All repositories within the dhaaranig15 namespace.

Search by repository name

All content

Create a repository

Name	Last Pushed	Contains	Visibility	Scout
dhaaranig15/simplewebapp	3 minutes ago	IMAGE	Public	INACTIVE
dhaaranig15/mysimpleapplication	1 day ago	IMAGE	Public	INACTIVE
dhaaranig15/devops	13 days ago		Public	INACTIVE

1-3 of 3

36°C Sunny

Search

17:02 19-03-2023

## PIPELINE SCRIPT:

The screenshot shows the Jenkins 'Configure' page for a pipeline named 'simple-web-app'. The 'Definition' dropdown is set to 'Pipeline script'. The 'Script' section contains a Groovy script for a pipeline with a stage named 'Push Docker Image'.

```
18
19
20
21
22 =
23 +
24 +
25 +
26
27
28
29
30
31
32 }
33
34
35
```

The script defines a stage 'Push Docker Image' with a step 'script' that uses 'withDockerRegistry' and 'bat' to build and push a Docker image.

☒ Use Groovy Sandbox

[Pipeline Syntax](#)

**Advanced**

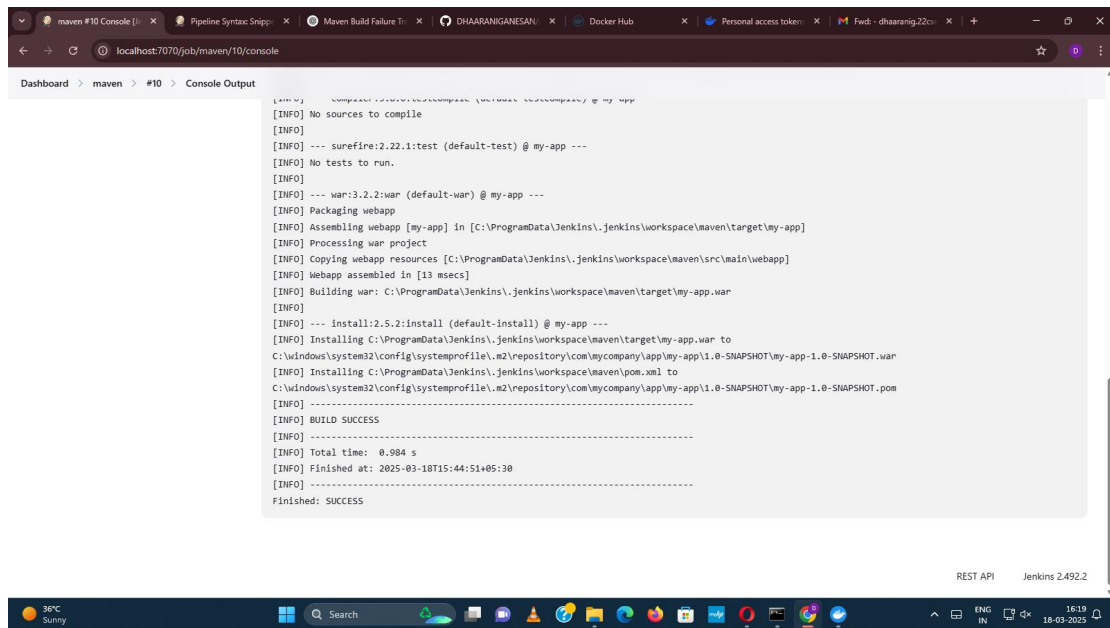
Advanced

[Save](#) [Apply](#)

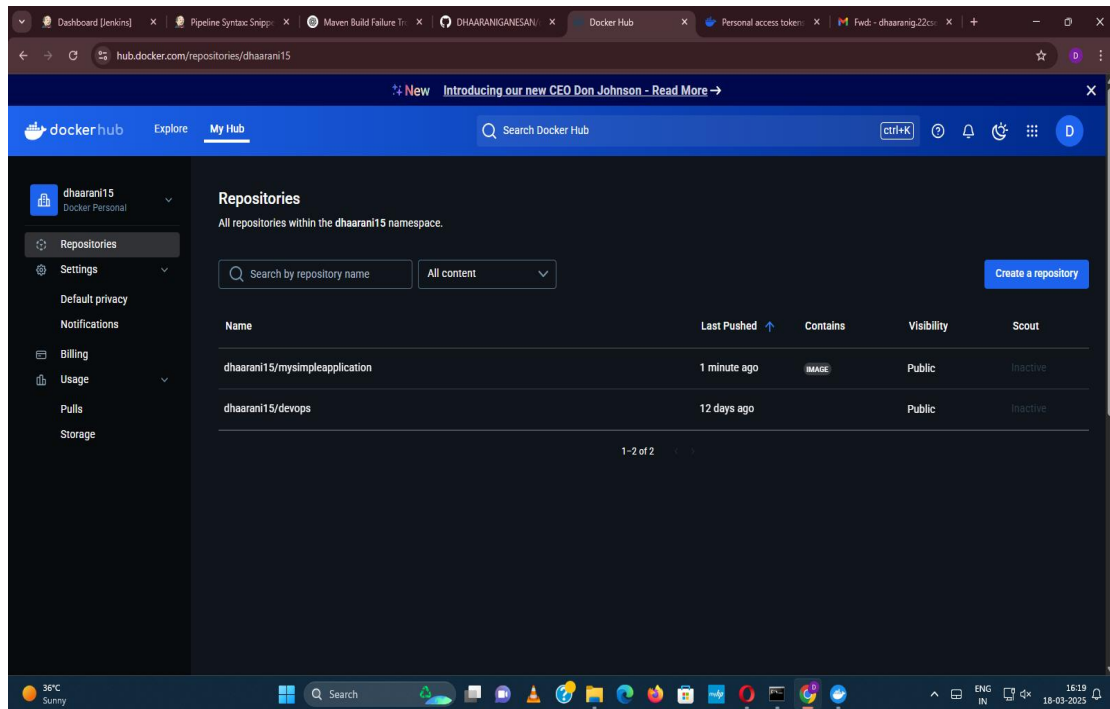
The screenshot shows the Jenkins console output for pipeline #19. The output displays the status of various steps, including 'Waiting' and 'Pushed', and concludes with 'Finished: SUCCESS'.

```
Waiting
865114aeca46: Waiting
a10b6847b9f1: Waiting
5b06fee3279e: Waiting
bbbc5226420a: Waiting
91e6cc55403a: Pushed
dccc5ea3c7d: Pushed
4f4fb700ef54: Pushed
fb44b165ee8b: Pushed
bbbc5226420a: Pushed
5b06fee3279e: Pushed
8dbbbc6af9dc: Pushed
5a7813e071bf: Pushed
865114aeca46: Pushed
a10b6847b9f1: Pushed
latest: digest: sha256:6fb825abb5eb007214d583cb8352456ba963ee37e02f74dc9fe4e7a7f2a0a10c size: 856
[Pipeline] }
[Pipeline] // withDockerRegistry
[Pipeline] }
[Pipeline] // script
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

REST API Jenkins 2.492.2



## PIPELINE BUILD:



The screenshot shows the Jenkins Dashboard at localhost:7070. The dashboard includes a sidebar with links to 'New Item', 'Build History', 'Manage Jenkins', and 'My Views'. The main area displays a table of builds with columns for status, name, last success, last failure, and last duration. The builds listed are 'maven', 'nginx', 'pipelines', and 'simple-web-app'. The 'Build Queue' and 'Build Executor Status' sections are also visible.

S	W	Name	Last Success	Last Failure	Last Duration
✓	☁	maven	33 min #10	50 min #9	3.5 sec
✓	☀	nginx	4 hr 14 min #1	N/A	1.4 sec
✓	☁	pipelines	35 min #4	36 min #3	9 sec
✓	☁	simple-web-app	1 min 38 sec #19	3 min 22 sec #18	1 min 11 sec

The screenshot shows the Jenkins Console Output for the 'nginx' build. The console output displays the build process, including the command used to run the build and the final status. The build was started by user 'DHAARANI\_G' and finished successfully.

```

Started by user DHAARANI_G
Running as SYSTEM
Building in workspace C:\ProgramData\Jenkins\jenkins\workspace\nginx
[nginx] $ cmd /c call C:\windows\TEMP\jenkins8271736921878421260.bat

C:\ProgramData\Jenkins\jenkins\workspace\nginx>docker run -itd -P sha256:9d6b58feebd2bd3c56ab585333d627cc6e281811cf6d6850fa4bcf2072c9496f222c6a3f4d087a4d4f8e4af76d78560a9a91749f1edaeb039852535d9689f2c

C:\ProgramData\Jenkins\jenkins\workspace\nginx>exit 0
Finished: SUCCESS
  
```

## ADVANTAGES OF JENKINS:

- It is an open-source tool.
- It is free of cost.
- It does not require additional installations or components. Means it is easy to install.
- Easily configurable.
- It supports 1000 or more plugins to ease your work. If a plugin does not exist, you can write the script for it and share with community.

- It is built in java and hence it is portable.
- It is platform independent. It is available for all platforms and different operating systems. Like OS X, Windows, or Linux.
- Easy support since its open source and widely used.
- Jenkins also supports cloud-based architecture so that we can deploy Jenkins in cloud-based platforms.